

AMENDMENTS TO THE CLAIMS

1 1. (Currently amended) A method of consolidating using a computer system
2 to consolidate multiple models using an automated process, wherein each model
3 comprises only rules that define a non-cyclic chain of dependencies among families and
4 features of families and include at least one rule having a constraint that references a non-
5 ancestral family to the constraint, the method comprising:

6 combining the models into a single, consolidated model that maintains [[the]] a
7 non-cyclic chain of dependencies among families and features of families,
8 wherein each model comprises only rules that define a non-cyclic chain of
9 dependencies among families and features of families and at least one
10 model includes a rule that causes a configuration conflict with another
11 model.

1 2. (Original) The method of claim 1 further comprising:
2 detecting any inconsistencies between rules included in the consolidated model;
3 and
4 attempting to resolve any detected inconsistencies.

1 3. (Currently amended) A computer system for consolidating multiple
2 models, wherein each model comprises only rules that define a non-cyclic chain of
3 dependencies among families and features of families and include at least one rule having
4 a constraint that references a non-ancestral family to the constraint, the system
5 comprising:

6 a processor; and
7 a memory, coupled to the processor, having code stored therein and executable by
8 the processor, the code comprising:
9 a model consolidation module to combine the models into a single,
10 consolidated model that maintains [[the]] a non-cyclic chain of
11 dependencies among families and features of families, wherein

12 each model comprises only rules that define a non-cyclic chain of
13 dependencies among families and features of families and at least
14 one model includes a rule that causes a configuration conflict with
15 another model.

1 4. (Currently amended) A computer program product having instructions
2 encoded therein to consolidate multiple models, wherein each model comprises only rules
3 that define a non-cyclic chain of dependencies among families and features of families
4 and include at least one rule having a constraint that references a non-ancestral family to
5 the constraint, the instructions comprising code to:

6 combine the models into a single, consolidated model that maintains [[the]] a non-
7 cyclic chain of dependencies among families and features of families,
8 wherein each model comprises only rules that define a non-cyclic chain of
9 dependencies among families and features of families and at least one
10 model includes a rule that causes a configuration conflict with another
11 model.

1 5. (New) The method of claim 1 wherein the models represent configuration
2 models of vehicles.

1 6. (New) The method of claim 1 wherein the consolidated model includes
2 only buildable configurations.

1 7. (New) The method of claim 1 wherein combining the models into a
2 single, consolidated model further comprises:
3 extending a rule from one of the models into an ancestor of a family of a defining
4 constraint; and
5 repairing the extension of the rule in a child of the ancestor of the family of the
6 defining constraint.

1 8. (New) The method of claim 1 wherein combining the models into a
2 single, consolidated model further comprises:
3 loading the models into a memory of the computer system;
4 constructing a directed acyclic graph of all rules in all the models;
5 for each model, determining which portions of an overall configuration space for
6 which the model does not provide a buildable configuration; and
7 for each model, constraining statements of the rules with in the model to fall
8 within a space of defining features of the model;

1 9. (New) The method of claim 8 wherein determining which portions of an
2 overall configuration space for which each model does not provide a buildable
3 configuration further comprises:
4 determining which families are ancestors of families of defining constraints; and
5 subtracting a right hand side and a left hand side of each rule of each family that
6 are ancestors of families of defining constraints from a rule representing
7 all buildable configurations.

1 10. (New) The system of claim 3 further comprising code to:
2 detect any inconsistencies between rules included in the consolidated model; and
3 attempt to resolve any detected inconsistencies.

1 11. (New) The system of claim 3 wherein the models represent configuration
2 models of vehicles.

1 12. (New) The system of claim 3 wherein the consolidated model includes
2 only buildable configurations.

1 13. (New) The system of claim 3 further comprising code to:
2 extend a rule from one of the models into an ancestor of a family of a defining
3 constraint; and

4 repair the extension of the rule in a child of the ancestor of the family of the
5 defining constraint.

1 14. (New) The system of claim 3 further comprising code to:
2 load the models into a memory of the computer system;
3 construct a directed acyclic graph of all rules in all the models;
4 for each model, determine which portions of an overall configuration space for
5 which the model does not provide a buildable configuration; and
6 for each model, constrain statements of the rules with in the model to fall within a
7 space of defining features of the model;

1 15. (New) The system of claim 14 further comprising code to:
2 determine which families are ancestors of families of defining constraints; and
3 subtract a right hand side and a left hand side of each rule of each family that are
4 ancestors of families of defining constraints from a rule representing all
5 buildable configurations.

1 16. (New) The computer program product of claim 4 further comprising code
2 to:
3 detect any inconsistencies between rules included in the consolidated model; and
4 attempt to resolve any detected inconsistencies.

1 17. (New) The computer program product of claim 4 wherein the models
2 represent configuration models of vehicles.

1 18. (New) The computer program product of claim 4 wherein the
2 consolidated model includes only buildable configurations.

1 19. (New) The computer program product of claim 4 further comprising code
2 to:
3 extend a rule from one of the models into an ancestor of a family of a defining
4 constraint; and

5 repair the extension of the rule in a child of the ancestor of the family of the
6 defining constraint.

1 20. (New) The computer program product of claim 4 further comprising code
2 to:
3 load the models into a memory of the computer system;
4 construct a directed acyclic graph of all rules in all the models;
5 for each model, determine which portions of an overall configuration space for
6 which the model does not provide a buildable configuration; and
7 for each model, constrain statements of the rules with in the model to fall within a
8 space of defining features of the model;

1 21. (New) The computer program product of claim 20 further comprising
2 code to:
3 determine which families are ancestors of families of defining constraints; and
4 subtract a right hand side and a left hand side of each rule of each family that are
5 ancestors of families of defining constraints from a rule representing all
6 buildable configurations.

1 22. (New) A computer system for performing an automatic consolidation of
2 multiple models of configurable products, the system comprising:
3 means for combining the models into a single, consolidated model that maintains
4 a non-cyclic chain of dependencies among families and features of
5 families, wherein each model comprises only rules that define a non-cyclic
6 chain of dependencies among families and features of families and at least
7 one model includes a rule that causes a configuration conflict with another
8 model.